IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF TENNESSEE
NORTHEASTERN DIVISION

JOHN SCOTT MAAS,	)	
	)	
Plaintiff,	)	
	)	
v.	)	**Civil Action No. 2:20-cv-00051**
	)	**Judge Waverly D. Crenshaw, Jr.**
BP EXPLORATION AND PRODUCTION, INC. and BP AMERICA PRODUCTION COMPANY,	)	**Magistrate Judge Alistair Newbern**
	)	
Defendants.	)	

PLAINTIFF'S RULE 26 EXPERT DISCLOSURE OF CHARLES J. WRAY, M.D.

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1. The undersigned, Charles J. Wray, M.D., is a licensed medical doctor, specializing in pulmonology, and presently affiliated with the Frist Clinic, 330 23rd Avenue North, Suite 500, Nashville, Tennessee 37203 (Telephone: 615-342-5900). Attached as Exhibit "1" is my current Curriculum Vitae which I affirm to be complete and current to the best of my knowledge. The publications which I have offered are described on my attached CV. I have not offered actual court testimony in any case in the four years preceding this affidavit.

2. I have treated John Scott Maas (DOB: 02-08-1963) for "severe asthma and restrictive lung disease" since 2019. He remains under my care. Attached as Exhibit "2" are my office treatment notes reflecting Mr. Maas' diagnosis and treatment plan, including an earlier statement to Mr. Maas' counsel reflecting my opinion, and my advice to Mr. Maas that the "probable" source of his severe pulmonary problems was his repetitive exposure to a chemical oil dispersant known as "Corexit." Mr. Maas has affirmed that he was regularly exposed to Corexit on a daily basis, for approximately twelve (12) hours per day for two (2) months.

3. I have been asked to provide a more detailed statement reflecting my opinions regarding the reasoning behind my chart notes and my opinions regarding medical causation. **Please note that, for purposes of every opinion that I have expressed, I preliminarily have accepted as factually complete and correct both Mr. Maas' statements about his exposure to Corexit; his history of no prior respiratory issues; and the findings in the records of other physicians who have previously treated and diagnosed Mr. Maas. Should it be determined that those facts are not accurate or complete, I would reserve the right to alter my opinions accordingly.** My diagnosis and treatment are based upon what appear to be credible and complete information regarding the etiology of Mr. Maas' present severe respiratory debilitation.

4. In formulating the details contained in this disclosure, I have relied upon the following:

(a) My own medical chart for Mr. Maas attached as noted above (Zip Drive, Ex. 2);

(b) Environmental Protection Agency Material Safety Data Sheets for Corexit;

(c) The Affidavit of John Scott Maas;

(d) A draft of the statement of Dr. Veena B. Antony;

(e) Treatises describing the principles and methodology used by Corexit medical researchers in defining the minimal level of exposure to Corexit that will create harm to the human respiratory system. That includes, but is not limited to, a treatise authored by **Dr. Veena B. Antony (University of Alabama at Birmingham Medical Facility) entitled "Heme Oxygenase-1 Protects Corexit 9500A-Induced Respiratory Epithelial Injury across Species," Veena B. Antony, et al., published April 2, 2015, copy attached, and incorporated herein by reference** (Zip Drive, Ex. 2);

(f) **Accepting, for purposes of my opinions, the accuracy and completeness of the facts related by Mr. Maas,** it is my opinion, upon a standard of reasonable medical certainty, that it is "likely" or "more probable than not" that Mr. Maas' exposure to Corexit that was sprayed from the air, or burned in combination with crude oil, produced aerosolized exposure in sufficient quantities to cause damage to the epithelial cells of the respiratory system

based upon the biologic mechanism described in the attached treatise, incorporated herein by reference, the damage to the epithelial cells produces an inflammatory response to the respiratory cells, which may produce a swelling that may inhibit respiratory function.

(g) As to the methodology used in describing the biologic plausibility of the respiratory harm resulting from even minimal ingestion of Corexit, I accept the findings of Dr. Antony's research treatise, and incorporate the contents, attached hereto.

5. Mr. Maas claims he is not, and has never been, a smoker. His records demonstrate no family history of COPD, asthma or other respiratory conditions. From a differential diagnosis perspective, no medical records have been reviewed by me which suggest a prior history of any type of pre-existing respiratory problems prior to his exposure to the Corexit. Corexit is a known, well-documented chemical irritant that, upon exposure, produces burning of the areas exposed, including the eyes, nose, throat, and chest (see attached the Manufacturer's EPA Material Safety Data Sheet). Reliable and trustworthy research confirms the biological mechanism, as detailed in the attached affidavit. In Mr. Maas' case, it is **probable** that his chemically-induced asthma commenced with his described (see affidavit) 2010 Corexit intense exposure in which he describes (12 hours per day for about two months). The resulting harm has progressed, with age, to the point of respiratory debilitation. The specific diagnosis, based upon the exposure to breathing of Corexit, is **"severe asthma and restrictive lung disease."** The research reviewed suggests that his level of epithelial cell respiratory damage caused by Corexit may require very minimal respiratory ingestion, much less daily regular breathing of the aerosolized or burning fumes of Corexit. Air quality testing in the zone that was patrolled and cleaned by Mr. Maas and his crew have been helpful in elaborating on that aspect of the causation issue, but (reportedly) that information has been requested from BP and not provided. Of greater diagnostic importance, it is significant to note that the individual variations in cell damage may idiopathically occur in certain individuals

for reasons not known or unknowable (see attached Antony treatise). Depending on the highly individualized response, Corexit may induce the expression of Heme Oxygenase-1 (HO-1), a cyto-protected enzyme with anti-apoptotic and anti-oxidant activity in the human bronchial airway epithelium. That substance is a protectant against Corexit-induced inflammation and cellular apoptosis. Otherwise stated, the ability of certain individuals to generate that protective substance, in response to the Corexit-induced inflammation, may define the ability of some individuals to avoid or delay long-term permanent respiratory problems, while other individuals (who idiopathically do not produce the same HO-1 response) may suffer serious respiratory harm. Concisely, it is my opinion that any breathing of the highly toxic, chemical irritant "Corexit" may cause permanent respiratory harm, particularly in individuals who idiopathically are more susceptible to that damage than others who may be natural resistant. Certainly, without doubt, **if Mr. Maas is correct** in his claim that he and his crew members personally observed the spraying of Corexit from airplanes, in their immediate vicinity, and that they immediately experienced severe eye, nose and throat burning, that exposure is certainly enough to cause the type of chemically-induced asthma presently suffered by Mr. Maas, and as described in the Corexit research treatises that I have reviewed (copies attached).

6. The biologic mechanism supporting the likelihood of injury from repeated exposure to Corexit is concisely described in the following quotation from the attached treatise researched and co-authored by Dr. Antony:

> "Having established that CE (Corexit) exposure induces apoptosis of epithelial cells, we next investigated the underlying molecular mechanisms causing cell death. Overproduction of ROS can cause apoptosis by inducing mitochondrial dysfunction and subsequent release of pro-apoptotic factors and ROS directly induces capese-free-dependent apoptosis. Intracellular ROS generation was evaluated by pre-incubating BEAS-2B cells with a fluorescent probe, DCFDA, which can be oxidized by H2O2. ROS generation was augmented after three hours of exposure to CE (Corexit) in a dose-dependent manner. … Our results suggest

cell death. Overproduction of ROS can cause apoptosis by inducing mitochondrial dysfunction and subsequent release of pro-apoptotic factors and ROS directly induces capese-free-dependent apoptosis. Intracellular ROS generation was evaluated by pre-incubating BEAS-2B cells with a fluorescent probe, DCFDA, which can be oxidized by H2O2. ROS generation was augmented after three hours of exposure to CE (Corexit) in a dose-dependent manner. … Our results suggest that ROS production and oxidative stress lead to apoptosis in epithelial cells exposed to CE (Corexit)." Antony, copy attached, p. 7 of 16.

7. As Mr. Maas' diagnosing and treating pulmonologist, it is my opinion, based upon reasonable medical certainty, that it is probable that the level of exposure described by Mr. Maas to aerosolized (by spraying or burning) Corexit-saturated crude oil, was substantially sufficient exposure to cause harm to the epithelial cells of Mr. Maas' airways, resulting in a progressive decline (as he has aged) in his respiratory function. I support the treatise findings describing the "general causation" considerations confirming that even minimal Corexit exposure can cause severe cell damage that is irreversible in **some** individuals, based upon their individual propensities to resist that cellular damage by their ability to respond to the chemically-induced inflammation by a naturally occurring protective agent, HO-1. Corexit is an acknowledged, highly toxic chemical irritant to human contact, particularly the sensitive respiratory airways. In Mr. Maas' case, the facts summarized suggest no basis for any differential diagnosis, leading to the "probable" conclusion (more likely than not) that his claimed daily exposure to Corexit for two months in the Summer of 2010 damaged the epithelial cells in his respiratory system, producing the present diagnosis of chemically induced asthma and resulting restrictive lung disease.

WITNESS MY HAND this the 8th day of April, 2021.

CJWray

Charles J. Wray, M.D.

Notary Public

My Commission Expires: 1-30-2024

Prepared by:

BURGER, SCOTT & McFARLIN

/s/Wm. Kennerly Burger
Wm. Kennerly Burger, BPR #3731
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CERTIFICATE OF SERVICE

I hereby certify that a true and exact copy of the foregoing was forwarded, via electronic filing, to the following: Howard E. Jarvis (hjarvis@maronmarvel.com), Maron, Marvel, Bradley, Anderson & Tardy, LLC, 12144 Southwick Circle, Farragut, TN 37934, on this the 9th day of APRIL, 2021.

/s/Wm. Kennerly Burger
Wm. Kennerly Burger

cc: Mr. Christian K. Burger
Ms. Claire Burger Perkins
Mr. Trey McFarlin
Mr. John Scott Maas

Charles Jackson Wray, MD

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EDUCATION:

- University of California San Diego - San Diego, CA
  Pulmonary & Critical Care Fellow, 2004-2007
- Vanderbilt University School of Medicine - Nashville, TN
  Hugh J. Morgan Chief Resident in Internal Medicine, 2003-2004
  Internal Medicine Resident, 2000-2003
  M.D., May 2000
- Dartmouth College - Hanover, NH
  B.A. in Engineering Sciences, Minor in French, June 1996

EMPLOYMENT:

- The Frist Clinic - Nashville, TN
  Pulmonary, Critical Care, & Sleep Medicine, 2007-Present
- Escondido Pulmonary Group - Escondido & Poway, CA
  Pulmonary & Critical Care Locum Tenens, 2005-2006
- San Diego VA Medical Center - La Jolla, CA
  Emergency Room Attending Physician, 2005-2006
- Kindred Hospital - San Diego, CA
  Evening Physician, 2005-2006
- Skyline Medical Center - Nashville, TN
  Evening Physician, ICU, 2003-2004

LEADERSHIP:

- Director, Quality Program
  Select Specialty Hospital Nashville, 2021-Present
- Director, Pharmacy & Therapeutics Program
  Select Specialty Hospital Nashville, 2007-2021
- Member, Medical Executive Committee
  Select Specialty Hospital Nashville, 2007-Present
- Member, Centennial Medical Staff Association Finance Committee
  Centennial Medical Center Nashville, 2018-Present
- Member, Medical Executive Committee
  Centennial Medical Center Nashville, 2015-2020

RESEARCH:

- Hemodynamic Predictors of Post-Operative Outcomes following Pulmonary Thromboendarterectomy for Chronic Thromboembolic Pulmonary Hypertension.

PUBLICATIONS:

- Wray CJ, Auger WA. Evaluation of patients for pulmonary endarterectomy. Semin Thorac Cardiovasc Surg 2006; 18:223-9.
- Wray CJ, Morris TA. Thromboembolic disease: therapy. In: Bordow RA, Ries AL, Morris TA, eds. Manual of clinical problems in pulmonary medicine. 6th edition. Philadelphia, PA: Lippincott Willams & Williams, 2005.

PRESENTATIONS:

- "Use of Omalizumab for Cessation of Corticosteroid Therapy in a Patient with Sarcoidosis, Aspergillomas, Long-Standing Asthma, and Allergic Bronchopulmonary Aspergillosis." Western Region American Federation for Medical Research Meeting. Carmel, CA. Feb 2006.
- "Pulmonary Vascular Resistance and Pulmonary Thromboendartecectomy: A Prospective Study." American Thoracic Society International Conference. San Francisco, CA. May 2007.
- "Correlation between Preoperative Fractional Pulse Pressure and Early Hemodynamic Outcomes after Pulmonary Thromboendarterectomy." American Thoracic Society International Conference. San Francisco, CA. May 2007.
- "Preoperative Clinical Predictions of Early Postoperative Hemodynamic Outcomes after Pulmonary Thromboendarterectomy." American Thoracic Society International Conference. San Francisco, CA. May 2007.

LICENSURES & CERTIFICATIONS:

- Tennessee Medical License
- Board Certification in Internal Medicine, August 2003
- Board Certification in Pulmonary Disease, October 2007
- Board Certification in Critical Care Medicine, November 2008
- Board Certification in Sleep Medicine, November 2009

HONORS:

- American Federation for Medical Research Pulmonary and Critical Care Award, 2006
- General Internal Medicine Outstanding Resident Award, Vanderbilt, 2002
- Tom E. Nesbitt Award for Character & Leadership, Vanderbilt, 2000
- Benjamin F. Byrd Cardiovascular Research Award (AHA), 1997
- Magna Cum Laude Graduate, Dartmouth College, 1996
- Philip R. Jackson Award for Improved Safety Device, Dartmouth College, 1995

ZIP DRIVE

RECORDS

WRAY AFFIDAVIT EX. 2